

ABSTRACT

In order to provide a pulse power supply device using regenerating magnetic energy stored in a discharge circuit to a capacitor so as to use it as next discharge energy and supplying a bipolar pulse current with high repetition, a bridge circuit is composed of four inverse-conductive semiconductor switches, a charged energy source capacitor is connected to a DC terminal of the bridge circuit, and an inductive load is connected to its AC terminal. A control signal is supplied to gates of the inverse-conductive semiconductor switches, and a control is made so that when a discharge current rises, is maintained or is reduced, all the gates are turned off, and the magnetic energy of the electric current can be automatically regenerated to the energy source capacitor by a diode function of the switches. Further, a large-current power supply is inserted into a discharge circuit so as to replenish energy loss due to discharge, thereby enabling high-repetition discharge.